Title: CONNECTION DEVICE

Inventor: CHANG, Lien-Wen

LEE, Ko-Hsien

LI, Chien-Ming

Cross Reference to Related Applications

[0001] **This application claims priority of Taiwan Patent Application Serial No. 092201897 filed on January 30, 2003.**

Field of Invention

[0002] The present invention relates to a device for connecting two electronic products.

Background of the Invention

[0003] A connection device of the prior arts, including a rivet body **100** and a rivet pin **200**, is shown in Fig. 1a, Fig. 1b and Fig. 2.

[0004] The rivet body **100** has in turn, a first part **101** with an arrow-alike shape, a second part **103** with a diameter, a third part **105** with a larger diameter and a forth part **107** with a still larger diameter. Between the first part **101** and the forth part **107**, there is an axial slot **109**. Placed between the first part **101** and the second part **103**, a radial slot **111** is connected to the axial slot **109**. The axial slot **109** has an end **113** with gradually increasing diameters. Conventionally, elastic materials are better for the rivet body **100** in deforming and in shock absorbing.

[0005] The rivet pin **200** is a solid rod-shaped object, having in turn, a pinpoint **202**, a rod **204**, and an end **206**. In mounting, the end **206** of the pin is corresponding to the end **113** of the rivet body. In addition, there are bars **208**, with larger diameters, placed on both ends of the rod **204**. In mounting too, the diameters of the bars **208** are suitable for the axial slot **109**. Moreover, the length of the rivet pin **200** is not greater than the length of the end part **113** plus the axial slot **119**. Conventionally, hard materials of the rivet pin **200** are better for mounting.

[0006] The connection device of the prior arts has the rivet body **100** placed into the holes on both shells of the two objects to be connected. As illustrated in Fig. 2, the object **1** is fixed between the first part **101** and the third part **105**, and the object **2** is fixed between the third part **105** and the forth part **107**. Then the rivet pin **200** is stuck into the axial slot **109**. Therefore, a new connection device is expected for a better usability.

Summary of the Invention

[0007] A connection device, for connecting the first shell of a first electronic product to a second shell of a second electronic product, is provided. The first shell includes a first hole defining a wall, and the second shell includes at least a second hole.

[0008] Features of the connection device lie in a rivet pin and a rivet body. The rivet pin has a first part and a second part. The first part with threads thereon engages with the wall of the first shell enabling the rivet pin to mount onto the first shell. A bolt head, located between the first part and second part of the rivet pin, is provided for users to rotate the rivet pin. Inserted into the second hole to connect to the second shell, the rivet body has

an axial slot allowing that the second part of the rivet pin passes through and engages with the rivet body to connect the first shell and the second shell.

[0009] Moreover, a rivet device is provided for connecting a fan to the first shell of a first electronic product. The first shell includes a first hole defining a wall, and the fan has a second shell including at least a second hole.

[0010] The rivet device includes a rivet pin and a rivet body. The rivet pin has a first part and a second part. The first part with threads thereon enables the rivet pin to mount onto the first shell. A bolt head, located between the first part and second part of the rivet pin, is provided for users to rotate the rivet pin. Inserted into the second hole to connect to the second shell, the rivet body has an axial slot allowing that the second part of the rivet pin passes through and engages with the rivet body to connect the first shell and the second shell.

Brief Description of the Drawings

[0011] Fig. 1a and 1b are respectively schematic diagrams of a rivet body and of a rivet pin according to the prior arts.

[0012] Fig. 2 is a schematic diagram of a connection device according to the prior arts;

[0013] Fig. 3 is a schematic diagram of a rivet pin according to an embodiment of the present invention; and

[0014] Fig. 4 is a schematic diagram of a connection device according to an embodiment of the present invention.

Detailed Description

[0015] A connection device, as shown in Fig. 4, for connecting a first shell **111a** of a first electronic product to a second shell **222a** of a second electronic product, is provided. The first shell **111a** includes a first hole **111b** defining a wall **111c**, and the second shell **222a** includes at least a second hole **222b**.

[0016] Features of the connection device lie in a rivet pin **200** and a rivet body **100**, as illustrated in Fig. 3. The rivet pin **200** has a first part **200a**, a second part **200b**, and/or a bolt head **210**. The first part **200a** with threads **212** thereon engages with the wall **111c** of the first shell **111a** enabling the rivet pin **200** to mount onto the first shell **111a**. As for the second part **200b**, there are, in turn, a pinpoint **202**, then a rod **204** with a diameter, and bars **208** placed on both ends of the rod **204**. A bolt head **210**, located between the first part **200a** and the second part **200b** of the rivet pin, is provided for users to rotate the rivet pin **200**. Inserted into the second hole **222b** to connect to the second shell **222a**, the rivet body **100** has an axial slot **109** allowing that the second part **200b** of the rivet pin **200** passes through and engages with the rivet body **100** to connect the first shell **111a** and the second shell **222a**. In mounting, the diameters of the bars **208** are corresponding to the axial slot **109**, and the length of the second part **200b** is not greater than the total length of the axial slot **109**.

[0017]

[0018] With the device described above, the connecting positions of both the first shell **111a** and the second shell **222a** can be decided with better precision and fewer limitations. In addition to an improved usability, the connection device has less weight.

[0019]

[0020] Another object of this invention is to provide a rivet device, as shown in Fig. 3 and Fig. 4, for connecting a fan **222** to the first shell **111a** of an electronic product, is provided. The fan **222** has a second shell **222a**. The first shell **111a** includes a first hole **111b** defining a wall **111c**, and the second shell **222a** includes at least a second hole **222b**. The fan and the alike serve as coolers in electronic products, such as projectors.

[0021] The rivet device has a rivet pin **200** including a first part **200a**, a second part **200b**, and a bolt head **210**. The first part **200a** with threads **212** thereon engages with the wall **111c** of the first shell **111a** enabling the rivet pin **200** to mount onto the first shell **111a**. As for the second part **200b**, there are, in turn, the pinpoint **202**, the rod **204** with a diameter, and bars **208** placed on both ends of the rod **204**. A bolt head **210**, located between the first part **200a** and the second part **200b** of the rivet pin, is provided for users to rotate the rivet pin **200**. The rivet device further has a rivet body **100**. Inserted into the second hole **222b** to connect to the second shell **222a**, the rivet body **100** has an axial slot **109** allowing that the second part **200b** of the rivet pin **200** passes through and engages with the rivet body **100** to connect the first shell **111a** and the second shell **222a**. In mounting, the diameters of the bars **208** are corresponding to the axial slot **109**, and the length of the second part **200b** is not greater than the total length of the axial slot **109**.

[0022] While this invention has been described with reference to the illustrative embodiments, these descriptions should not be construed in a limiting sense. Various modifications of the illustrative embodiment, as well as other embodiments of the invention, will be apparent upon reference to these descriptions. It is therefore contemplated that the appended claims will cover any such modifications or embodiments as falling within the true scope of the invention and its legal equivalents.